

WHITE PAPER

Re-Inventing Logistics – Using Commercial Standards for DoD Logistics Data Exchange

Initiative Description:

To modernize the fundamental electronic data interchange infrastructure that serves as the linchpin connecting nearly all logistics processes and Automated Information Systems (AISs). The modernization effort entails migrating from the current proprietary, unique, and technologically obsolete information exchange infrastructure to the commercial, open, and flexible ANSI X12 variable-length transaction set standards as put forth in the *DoD Information Technology (IT) Standards Management Plan for Electronic Data Interchange (EDI)*, 3 June 1997.

The Defense Information Infrastructure (DII) Common Operating Environment (COE) will provide the basis for the migration and integration of capabilities separately developed and deployed by the Components. New development must adhere to the DII COE architectural guidelines. Strategies must take advantage of the new infrastructure environment to provide interoperability while maximizing use of existing capabilities; such as, the Defense Logistics Management System (DLMS), which is a strategic enabler to move DoD to a fully compliant environment. This modernization effort meets the Department's commitment to improve interoperability, effectiveness, and efficiency, and reduce costs through uniform standards implementation.

Background:

The Defense Logistics Standard Systems (DLSS), previously named the Military Standard Systems (MILS) and their planned replacement, the DLMS, are the core procedures (the building code) upon which nearly all DoD and non-DoD Federal Agency AISs are built.

The DLSS and DLMS are not systems in the classical sense. They are a body of procedural manuals and electronic transmission conventions, with which all trading partners have agreed. The DLSS (4,440 pages) and DLMS (4,000 pages) manuals document the standards (procedures, business rules, organizational responsibilities, data elements, codes, transaction formats and performance metrics) that govern virtually all logistics functions and information interchanges. The DLSS and DLMS manuals are available both in hard copy form and on the WEB. From an AIS view, the DLSS and DLMS serve as the building code to which Government/Commercial central design activities develop AIS application computer code to support Federal Government Logistics exchange of information.

The primary difference between the DLSS and the DLMS is the information exchange transaction format. The 35-plus year old DLSS are based upon 1960's (fixed-length 80-position) format invented by DoD and adopted by other Federal Agencies. The 524 technologically obsolete and Government unique transaction formats make them inflexible to support process improvements and incompatible with the private sector. The DLMS are based upon the Commercial standard EC/EDI (the American National Standards Institute (ANSI) chartered Accredited Standards Committee (ASC)) X12 variable-length transaction sets, which are designed to adapt to changing information requirements. This is illustrated by the fact the DLMS include over 100 process improvements that cannot be accommodated within the DLSS. With few exceptions, however, all of the existing wholesale and retail systems continue to operate using the DLSS structure – still bound to the logic and limitations of the 80-position format and the corresponding “flat file” data repositories.

High Automation of Logistics:

The vast preponderance of the transactions that we are dealing with under this initiative do not and should not require human input or intervention. Efforts over the past 30 years have been to remove the human requirement wherever possible by building business decision rules into the systems. Most of the 2 billion annual transactions that we are talking about are passed between computer systems without human intervention or knowledge. The following is an illustration of the types of information exchanges that routinely occur:

- ⌚ A retail computer system on a ship, army post, or air base determines (through pre-established decision rules/algorithms) that it has reached the reorder point for an item and requires 10 to replenish it's stock. The retail computer system creates an electronic message (a MILSTRIP requisition) and passes it to the appropriate wholesale materiel management computer system.
- ⌚ The wholesale materiel system runs through its decision rules and determines the method of support (DVD, Stock, etc.). In our example the item is stocked so the system next determines where adequate stocks of the required item are located and selects the most appropriate and directs, via electronic message (MILSTRIP materiel release order (MRO)), that stock location's computer system to satisfy the original requirement.
- ⌚ The stock location's computer takes the requirement through its decision rule set, considering things like the priority and other requirements destined to the same customer. Lets assume that in checking the stock locations computer determines that it only has 8 of these items on hand. The stock location's computer system would notify the material management computer system, via electronic message (MILSTRIP shipment status), that it is going to ship 8 items and deny 2. The stock location system would then direct a stock picker to select the 8 items to be shipped (this is the first time that a human has gotten involved in the process).
- ⌚ Upon receiving the electronic notification (MILSTRIP denial) from the stock location system that 2 items could not be supplied by the preferred stock location; the materiel management computer system would select an alternative location for the 2 items,

direct the alternative stock location computer system (MILSTRIP MRO) to supply the 2 items that the preferred location didn't have and notify the original stock location computer system to schedule a physical inventory (MILSTRAP physical inventory request) of the item to resolve the discrepancy, and notify the original retail computer system electronically (MILSTRIP supply status) of the current status of its requirement, i.e., two stock locations are shipping the requested materiel.

- ⌚ While the foregoing is a simplification, which doesn't cover the financial, transportation, and potential procurement transactions associated with this one customer requirement, it illustrates that there are a myriad of electronic transfers of information among various logistics computer systems with little or no human involvement.

Migration Need:

The DLSS are more than 35 years old and are constraining the growth of logistics data exchanges with the following consequences:

- ◆ *Limiting the amount of data that can be transmitted.* Because the DLSS have a fixed-length 80-position record format, they do not support the requirements of new DoD, service, and agency initiatives. Information requirements to support process re-engineering can be expected to grow significantly. The current logistics EDI infrastructure can not support current information requirements and it surely will not support those that have yet to be developed.
- ◆ *Increasing the cost of ADP operations.* The services and agencies design, program, and operate solutions that bypass the DLSS limitations. The inflexibility of the DLSS have lead to the adoption of many component unique transactions through the years. Over the past 18 months \$10M alone has been spent to develop bridging software and modify legacy applications so information could be exchanged with the Distribution Standard System.
- ◆ *Inhibiting modernization of the legacy systems.* The DLSS transaction formats and codes are embedded in the program code and data structures of many legacy systems. The recent analyses responding to MRM #11 highlighted the constraints of the current rigid EDI infrastructure. What should have been relatively simple was cost prohibitive.
- ◆ *Increasing the cost and difficulty of developing industry partnerships in third-party logistics.* The DLSS are a DoD proprietary standard and use an outdated format. The Defense Logistics Agency recently spent \$1M to make a system they planned to retire year 2K compliant, so a third party logistics contractor could use it to support a DLA outsourcing initiative. This was necessary due to the inability of the contractor to provide a system that could interface with the other DoD logistics systems in their proprietary DLSS EDI formats.
- ⌚ *Hinders the acquisition of COTS application software applications.* Replacing some of the legacy systems is an option that is being pursued by some of the

Components. The Army, for example, is planning to replace their Commodity Command Standard System (CCSS) with COTS to the maximum extent. This however, further strengthens the need for DoD to adopt commercial information exchange standards. COTS software is not based upon the DoD proprietary information exchange infrastructure, they use commercial EC/EDI standards.

These constraints are inhibiting DoD's operational effectiveness as dramatic changes are occurring in military logistics. The environment has changed from the cold war focus of a major war in Europe with pre-positioned forces and assets to operations involving diverse missions anywhere in the world with little notice. DoD needs to support these missions with fewer assets and a smaller logistics infrastructure. To respond to these changes, DoD is developing new logistics strategies. Recent Office of the Secretary of Defense (OSD) and Joint Chiefs of Staff (JCS) documents describe the vision of future military operations and the technical and data architectures that will support them.

Relationship to Other Technologies:

The migration to the Commercial X12 EDI standards is complementary to other technologies and standards. Use of WEB, Optical Memory Cards, Radio Frequency Tags, Smart Cards, etc., should not be viewed as mutually exclusive alternatives, rather they are media for the storage, transfer, and retrieval of information arrayed in the Commercial X12 format. Utilization of the X12 standard makes the information format independent of the transmission media.

Current Status:

- ⌚ The DLMS Implementation Conventions have been developed and approved by all the Trading Partners (e.g., DoD Components, GSA, FAA, Coast Guard, etc.)
- ⌚ The DLMS Implementation Conventions have been updated to ANSI version 4010 which is Year 2K compliant and have been approved by ANSI and EDISMC.
- ⌚ A translator has been developed and tested to enable translation back and forth between the DLSS and DLMS to assist in the migration.
- ⌚ The Joint Electronic Commerce Program Office has been established and is ready to lead and coordinate the migration effort.

Next Steps:

- ⌚ Sign out a Defense Reform Initiative Directive directing the migration to Commercial EDI standards within logistics.
- ⌚ Form a Joint Service/Agency Working Integrated Process Team to develop Detailed Implementation Plan within 30 days of the signed DRID.
- ⌚ Develop supporting policy and develop budget guidance within 90 days of the signed DRID.
- ⌚ Develop a Migration Strategy and Business Case Document within 90 days of the signed DRID.

- ⌚ Complete a Detailed Implementation Plan within 180 days of the signed DRID.
- ⌚ Monitor Service/Agency Implementation Plan execution until complete.

Summary:

The DoD has been a leader in the development and coordination of the commercial data exchange standards that are sanctioned by the American National Standards Institute (ANSI). These commercial standards represent a significant technological upgrade to the “80 card column” formats of the “MILS”. Their variable length formats are significantly more adaptable to systems and enable a significant degree of flexibility in negotiated conventions with trading partners. These standards, which have been consolidated under the heading of X12, are being used in much of commercial industry and serve as one of the foundation pillars for the electronic commerce revolution. DoD is also an active participant in the development of EDIFACT--the international EDI standard. It is important to recognize that these standards also facilitate the machine-to-machine interface requirements for much of the DoD high-volume transactions. Simply stated, these formats are a fundamental prerequisite to significant process change in DoD logistics systems.